First catch your koala! Use of a trap to capture koalas *Phascolarctos cinereus* for ecological studies

Motohiro Hasegawa and Frank N. Carrick
Department of Zoology, University of Queensland, St Lucia, Queensland 4072

ABSTRACT

A trap to capture koalas, which can be deployed by one person, has been successfully trialed in an open forest in south-east Queensland. Nine adult koalas were captured in two trapping periods in 1993 and 1994. The use of this trap can increase the effectiveness of the capture of koalas for ecological studies.

INTRODUCTION

The remaining national koala population is fragmented into many relatively small and isolated populations, and most of these are found outside national parks or reserves (Phillips 1990). The conservation of koalas requires the support of local governments and rural communities and it is important to have high quality data on each koala population and its habitat to facilitate the implementation of appropriate planning and management measures (Pahl *et al.* 1990). White (1989) considers that the significance of koala habitats in many areas around Brisbane is still unknown. Indeed, relatively few ecological studies on free-ranging koala populations in south-east Queensland have been conducted in the past (White and Kunst 1990). This is partly due to the labour intensive and physically demanding nature of a conventional flagging technique for capturing free-ranging koalas. Therefore, development of improved catching methods can contribute significantly to the success of such studies. This paper reports the results of an alternative trapping method.

STUDY AREA AND METHODS

A study site at Point Halloran (27°34′S, 153°18′E) in the Redland Shire, approximately 30 km south of the Brisbane central business district in south-east Queensland, Australia, was chosen for the trapping trial. It is located at the mouth of Eprapah Creek on the shores of Moreton Bay and comprises an area of 28 ha of woodland within a larger (106 ha overall) area which also contains mangrove forest and saline flats. The area was acquired by the Redland Shire Council for environmental protection (Redland Shire Council Eprapah Conservation Reserve) in 1990.

Koalas were captured to conduct an ecological investigation on the study site from March to May in 1993 and in February 1994 using two different methods. A conventional way of capturing koalas involved locating an animal in a tree. A person then climbed the tree with the assistance of a catching team on the ground and used two extendable (to about 6 m) aluminium poles equipped with a noose and flag (Gall 1978; Lee and Martin 1988) to bring the koala to the ground. The koala was firstly noosed, using a plastic coated braided wire, which had a stopper fitted to prevent the animal from choking. Then, while a rope connected to the wire noose was held taut, the animal was induced to climb down the tree by flapping a flag over its head. When the koala was in reach from the ground, it was quickly caught by hand and placed in a hessian bag or a transport cage (47 × 37 × 44 cm).

The method of capturing koalas in this study employed a trap (Fig. 1). It comprised two pieces of galvanized corrugated steel swimming pool surround (1 m wide × 5 m long). A temporary fence was built using the swimming pool surround, supported by five hooked steel rods (1.5 m), around a tree in which a koala was found resting during the daytime. Also, the tree trunk was encased with a temporary collar (40 cm wide) of galvanized steel sheet at a height of about 1 m above ground level. Koalas often come down to the ground to move between trees, especially at night, and so when a koala descended the tree it was unable to re-climb the tree and was retained within the fence until recovered early the following day.

All the captured koalas were transported to the research facility of the Koala Study Program at The University of Queensland Veterinary Science Farm, Pinjarra Hills (approximately

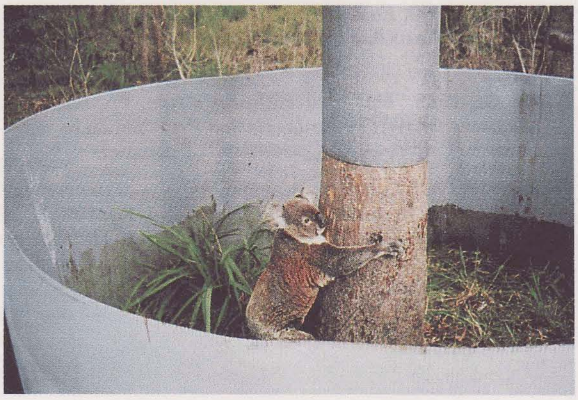

Fig. 1. Koala trap with an animal captured on 22 May, 1993. Note tree collar and the hooked steel rods supporting the temporary fence of the trap.

25 km west of Brisbane) for health assessment and sample collection. The koalas were ear tagged (right or both ears) with small, numbered, stainless steel tags (Style 1005-3 monel, National Band and Tag Company, New Port, KY, USA) for permanent identification, and fitted with a flexible rubber collar to which a radio transmitter (Titley Electronics, New South Wales, Australia) was attached. The animals were released back into the tree of capture within two days.

RESULTS

Eighteen adult koalas were captured: nine were trapped; nine were captured by the conventional flagging technique. The mean number of trap nights before capture was 1.9 days per capture using the trapping method. The trap was especially useful when attempting to catch a koala which was resting high in a large tree that was inaccessible by climbing. Large trees proved more effective than small trees because when koalas were trapped in a large tree, it appeared to be more difficult for them to climb over the collar, perhaps due to the circumference of the trunk inhibiting purchase for climbing. The trap was effective for capturing females with back young, probably due to the decreased mobility of these individuals. Two young male koalas were trapped simultaneously in the same tree. However, the trap was ineffective where tree crowns overlapped, since koalas could jump or climb between adjacent trees. Koalas escaped from the tree on about 10 occasions, hence the trap had to be set around isolated trees. One koala remained in the same tree for seven days, and the trap had to be removed because of possible substantial stress to the animal.

Koalas were captured within about 30 minutes with the flagging technique after finding them in suitable positions. The number of animal captured per capture trip was 1.5. This technique required at least two people.

DISCUSSION

The flagging technique enables the capture of a relatively large number of koalas within a short time period, but requires multiple field workers and appropriate climbing gear such as a harness, ropes and a ladder. Furthermore, it is impractical when the koala is found resting at a considerable height in a large tree. There was no serious injury to either koalas or catchers in this study, but the method presented risks of falling from trees.

The trap described in this paper is a safe way of catching koalas and the whole process can be undertaken by one person. It seems also likely that the trap may involve less stress to animals, particularly when the trap can be checked at regular intervals throughout the night, so that the period of time for which animals are retained in the trap is minimized.

The use of the trap may require a capture programme to extend over a longer time period, because it involves finding a koala in a suitable tree, and also a koala may remain in the same tree for several days without descending. Once koalas are trapped, they have no access to food or shelter and could be vulnerable to predators. Therefore, traps must be checked as soon as possible whilst the trap is activated.

Where sufficient equipment is available, the flagging technique of capturing koalas is fast and reliable; however, for researchers working alone in the field the trapping method described here represents a safe and effective way of capturing the animals. The combination of the use of traps and flagging technique is also practical and desirable.

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BOOK REVIEWS — BOOK REVIEWS

"Chironomids: From Genes to Ecosystems"
ed by P. Cranston. CSIRO Press, Melbourne.
vi + 482 pp. RRP $120.00. 1995.

This book presents the edited proceedings of the XIIth International Chironomid meeting held in Canberra in January, 1994. Peter Cranston and the editorial team at CSIRO are to be congratulated on the rapidity with which the diverse contributions have been brought to press. They are also to be congratulated on the book's presentation. The format of the papers is uniform, the typeface is easy to read in the body of the text, the figures and the tables and the layout makes very effective use of halftones. The synthesis of reference lists at the end of the book and a useful index are further features which set this volume above the usual run of conference proceedings.

Abstracts are not included in the papers. On balance, this does not seem a detraction as most readers will want to read most contributions thoroughly. The proof-reading should have been better with significant numbers of grammatical and orthographical errors, although these do not often affect the understanding of content.

The book covers a wide range of topics — though not as wide as suggested by the subtitle. In fact, chironomid genetics is only treated in two well-considered papers by Jon Martin and his colleagues. There are, in addition, several cytogenetic reports, as would be expected for a family where such studies have been so fruitful. The majority of contributions deal, however, with the use of chironomids in biomonitoring, their ecology and/or their systematics.

The significance of the 45 contributions varies. One or two are status reports on work in progress. Two are based solely on data more than a decade old. Conversely, many are based on the accumulation of data over long periods or wide geographic areas, which are published elsewhere, if at all, in journals which are not widely accessible. Among these contributions may be mentioned those of the Gislason and Gardarsson group on Icelandic chironomid population emergence patterns, that of Janssens de Bisthoven *et al.* on the relationships of pollutants and morphological deformities, Ruse and Wilson's investigations of the use of pupal skins to monitor water and substrate quality and Stephens' review of the biology of the rice pest *C. tepperi.*

Two general aspects of the work stand out. The first is that there remains enough novelty to justify further significant effort in chironomid taxonomy. Ten new species are formally described in this book, but many others mentioned in its pages await classification. Some taxonomic highlights of the book include the first record of the subfamily Buchonomyiinae from the New World and investigations of the unusual chironomid fauna of axillary-held water in plants and the ectoparasites of trichopteran larvae.

The second general aspect of the book, which is the more striking since the contributions are not explicitly focused on it, is that the biology of chironomids is so variable that their use as environmental indicators requires their identification to genus level or better. This is particularly apparent in the studies of Hardwick *et al.*, testing rapid biodiversity assessment of streams in the Blue Mountains, Barton *et al.*, evaluating the accuracy of predictions of larval population composition from pupal skin collections, and Lindegaard and Brodersen, reviewing the distribution of taxa in different stream sections. It is also apparent in many other contributions covering properties as diverse as seasonality of emergence, tolerance of oxygen depletion and phototaxis. Clearly, a great deal of information is required about species' identifications and biology before this family (and the same would be true of most other invertebrates) can be used in any other than the crudest environmental assessment. Encouragingly, books like this go a long way to making such information widely available.

Don Colgan
Evolutionary Biology Unit, Australian Museum